

HUIV26 CDR SUBSTITUTIONS DISCLOSED IN SPECIFICATION

VH CDR1	1	2	3	4	5	6	7	8	9	10 (35)
SEQ ID NO: 26 WT, 2D4	G	F	D	F	S	R	Y	W	M	S
SEQ ID NO: 43	G	F	D	F	S	<b>H</b>	Y	W	M	S
SEQ ID NO: 44	G	F	D	F	S	R	Y	W	<b>I</b>	S
SEQ ID NO: 45 DcomD7, DhuG5, DhuH8	G	F	D	F	S	R	Y	W	M	<b>T</b>
SEQ ID NO: 46 2D4H1-C3	G	F	D	F	S	R	Y	W	M	<b>A</b>
SEQ ID NO: 47	G	F	D	F	S	R	Y	W	M	<b>G</b>

Note: The sequences correspond to those shown in the sequence listing for U.S. Ser. No. 09/995,529. The column numbering reflects the residue number within each sequence listing. The small unbolded numbers above some columns indicate the numbering used to identify the positions of substitutions in the beneficial mutations described by Figure 6 of U.S. Ser. No. 09/995,529. The bolded, underlined residues are those which differ from the wild-type residue at that position.

VH CDR1

26: Gly Phe Asp Phe Ser Arg Tyr Trp Met Ser

43: Gly Phe Asp Phe Ser His Tyr Trp Met Ser

44: Gly Phe Asp Phe Ser Arg Tyr Trp Ile Ser

45: Gly Phe Asp Phe Ser Arg Tyr Trp Met Thr

46: Gly Phe Asp Phe Ser Arg Tyr Trp Met Ala

47: Gly Phe Asp Phe Ser Arg Tyr Trp Met Gly

VH CDR2	1	2	3	4	5	6	7	8	9 <sup>(57)</sup>	10	11	12	13	14 <sup>(62)</sup>	15	16	17
SEQ ID NO: 28 WT, 2D4, 2D4H1- C3	E	I	N	P	D	S	S	T	I	N	Y	T	P	S	L	K	D
SEQ ID NO: 48	E	I	N	P	D	S	S	T	<u>A</u>	N	Y	T	P	S	L	K	D
SEQ ID NO: 49	E	I	N	P	D	S	S	T	<u>S</u>	N	Y	T	P	S	L	<u>D</u>	<u>K</u>
SEQ ID NO: 50	E	I	N	P	D	S	S	T	I	N	Y	T	P	<u>Y</u>	L	K	D
SEQ ID NO: 51	E	I	N	P	D	S	S	T	I	N	Y	T	P	<u>A</u>	L	K	D
SEQ ID NO: 52	E	I	N	P	D	S	S	T	I	N	Y	T	P	<u>H</u>	L	K	D
SEQ ID NO: 53	E	I	N	P	D	S	S	T	I	N	Y	T	P	<u>G</u>	L	K	D
SEQ ID NO: 54	E	I	N	P	D	S	S	T	I	N	Y	T	P	S	L	<u>Q</u>	D
SEQ ID NO: 55	E	I	N	P	D	S	S	T	I	N	Y	T	P	S	L	K	<u>S</u>
SEQ ID NO: 154	E	I	N	P	D	S	S	T	<u>A</u>	N	Y	T	P	<u>A</u>	L	K	D

Exhibit A  
US Patent Application No. 09/995,529  
Attorney Docket No. 30797-711.201  
HUIV26 CDR SUBSTITUTIONS DISCLOSED IN SPECIFICATION

VH CDR2	1	2	3	4	5	6	7	8	9 <sup>(57)</sup>	10	11	12	13	14 <sup>(63)</sup>	15	16	17
SEQ ID NO: 155 DcomD7, DhuG5, DhuH8	E	I	N	P	D	S	S	T	<u>A</u>	N	Y	T	P	<u>Y</u>	L	K	D
SEQ ID NO: 156	E	I	N	P	D	S	S	T	<u>A</u>	N	Y	T	P	<u>H</u>	L	K	D
SEQ ID NO: 162	E	I	N	P	D	S	S	T	<u>V</u>	N	Y	T	P	S	L	K	D

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HUIV26 CDR SUBSTITUTIONS DISCLOSED IN SPECIFICATION

VH CDR2

28: Glu Ile Asn Pro Asp Ser Ser Thr Thr Ile Asn Tyr Thr Pro Ser Leu Lys Asp  
48: Glu Ile Asn Pro Asp Ser Ser Thr Thr Ala Asn Tyr Thr Pro Ser Leu Lys Asp  
49: Glu Ile Asn Pro Asp Ser Ser Thr Thr Ser Asn Tyr Thr Pro Ser Leu Asp Lys  
50: Glu Ile Asn Pro Asp Ser Ser Thr Thr Ile Asn Tyr Thr Pro Tyr Leu Lys Asp  
51: Glu Ile Asn Pro Asp Ser Ser Thr Thr Ile Asn Tyr Thr Pro Ala Leu Lys Asp  
52: Glu Ile Asn Pro Asp Ser Ser Thr Thr Ile Asn Tyr Thr Pro His Leu Lys Asp  
53: Glu Ile Asn Pro Asp Ser Ser Thr Thr Ile Asn Tyr Thr Pro Gly Leu Lys Asp  
54: Glu Ile Asn Pro Asp Ser Ser Thr Thr Ile Asn Tyr Thr Pro Ser Leu Gln Asp  
55: Glu Ile Asn Pro Asp Ser Ser Thr Thr Ile Asn Tyr Thr Pro Ser Leu Lys Ser  
154: Glu Ile Asn Pro Asp Ser Ser Thr Thr Ala Asn Tyr Thr Pro Ala Leu Lys Asp  
155: Glu Ile Asn Pro Asp Ser Ser Thr Thr Ala Asn Tyr Thr Pro Tyr Leu Lys Asp  
156: Glu Ile Asn Pro Asp Ser Ser Thr Thr Ala Asn Tyr Thr Pro His Leu Lys Asp  
162: Glu Ile Asn Pro Asp Ser Ser Thr Thr Val Asn Tyr Thr Pro Ser Leu Lys Asp

Exhibit A  
US Patent Application No. 09/995,529  
Attorney Docket No. 30797-711.201  
HUIV26 CDR SUBSTITUTIONS DISCLOSED IN SPECIFICATION

VH CDR3	1	2	3	4	5	6	7	8	9	10	11 (102)
SEQ ID NO: 30 WT	P	V	D	G	Y	Y	D	A	M	D	Y
SEQ ID NO: 56	P	V	<u>P</u>	G	Y	Y	D	A	M	D	Y
SEQ ID NO: 57	P	V	<u>G</u>	G	Y	Y	D	A	M	D	Y
SEQ ID NO: 58	P	V	<u>I</u>	G	Y	Y	D	A	M	D	Y
SEQ ID NO: 59	P	V	<u>A</u>	G	Y	Y	D	A	M	D	Y
SEQ ID NO: 60	P	V	D	<u>P</u>	Y	Y	D	A	M	D	Y
SEQ ID NO: 61	P	V	D	<u>A</u>	Y	Y	D	A	M	D	Y
SEQ ID NO: 62	P	V	D	<u>H</u>	Y	Y	D	A	M	D	Y
SEQ ID NO: 63 2D4, 2D4H1-C3, DcomD7, DhuG5, DhuH8	P	V	D	G	Y	Y	D	A	M	D	<u>P</u>

VH CDR3	1	2	3	4	5	6	7	8	9	10	11 (102)
SEQ ID NO: 64	P	V	D	G	Y	Y	D	A	M	D	N

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**VH CDR3**

30: Pro Val Asp Gly Tyr Tyr Asp Ala Met Asp Tyr  
56: Pro Val Pro Gly Tyr Tyr Asp Ala Met Asp Tyr  
57: Pro Val Gly Gly Tyr Tyr Asp Ala Met Asp Tyr  
58: Pro Val Thr Gly Tyr Tyr Asp Ala Met Asp Tyr  
59: Pro Val Ala Gly Tyr Tyr Asp Ala Met Asp Tyr  
60: Pro Val Asp Pro Tyr Tyr Asp Ala Met Asp Tyr  
61: Pro Val Asp Ala Tyr Tyr Asp Ala Met Asp Tyr  
62: Pro Val Asp His Tyr Tyr Asp Ala Met Asp Tyr  
63: Pro Val Asp Gly Tyr Tyr Asp Ala Met Asp Pro  
64: Pro Val Asp Gly Tyr Tyr Asp Ala Met Asp Asn

Exhibit A  
US Patent Application No. 09/995,529  
Attorney Docket No. 30797-711.201  
HUIV26 CDR SUBSTITUTIONS DISCLOSED IN SPECIFICATION

VL CDR1	1	2	3	4	5	6	7	8 <sup>(27d)</sup>	9 <sup>(27e)</sup>	10 <sup>(27f)</sup>	11	12	13	14	15	16	17
SEQ ID NO: 20 WT, 2D4, 2D4H1- C3	K	S	S	Q	S	L	L	N	S	G	N	Q	K	N	Y	L	A
SEQ ID NO: 65	K	S	S	<u>R</u>	S	L	L	N	S	G	N	Q	K	N	Y	L	A
SEQ ID NO: 66	K	S	S	<u>S</u>	S	L	L	N	S	G	N	Q	K	N	Y	L	A
SEQ ID NO: 67	K	S	S	Q	S	L	L	<u>S</u>	S	G	N	Q	K	N	Y	L	A
SEQ ID NO: 68	K	S	S	Q	S	L	L	N	<u>Y</u>	G	N	Q	K	N	Y	L	A
SEQ ID NO: 69	K	S	S	Q	S	L	L	N	<u>W</u>	G	N	Q	K	N	Y	L	A
SEQ ID NO: 70	K	S	S	Q	S	L	L	N	<u>H</u>	G	N	Q	K	N	Y	L	A
SEQ ID NO: 71	K	S	S	Q	S	L	L	N	<u>R</u>	G	N	Q	K	N	Y	L	A
SEQ ID NO: 72	K	S	S	Q	S	L	L	N	S	<u>Y</u>	N	Q	K	N	Y	L	A
SEQ ID NO: 73	K	S	S	Q	S	L	L	N	S	<u>R</u>	N	Q	K	N	Y	L	A

VL CDR1	1	2	3	4	5	6	7	8 <sup>(27a)</sup>	9 <sup>(27a)</sup>	10 <sup>(27b)</sup>	11	12	13	14	15	16	17
SEQ ID NO: 74	K	S	S	Q	S	L	L	N	S	<u>H</u>	N	Q	K	N	Y	L	A
SEQ ID NO: 75	K	S	S	Q	S	L	L	N	S	<u>I</u>	N	Q	K	N	Y	L	A
SEQ ID NO: 76	K	S	S	Q	S	L	L	N	S	G	N	<u>K</u>	K	N	Y	L	A
SEQ ID NO: 157 DcomD7, DhuG5, DhuH8	K	S	S	Q	S	L	L	N	<u>W</u>	<u>Y</u>	N	Q	K	N	Y	L	A
SEQ ID NO: 158	K	S	S	Q	S	L	L	N	<u>Y</u>	<u>Y</u>	N	Q	K	N	Y	L	A
SEQ ID NO: 159	K	S	S	Q	S	L	L	N	<u>Y</u>	<u>H</u>	N	Q	K	N	Y	L	A
SEQ ID NO: 160	K	S	S	Q	S	L	L	N	<u>R</u>	<u>Y</u>	N	Q	K	N	Y	L	A
SEQ ID NO: 161	K	S	S	Q	S	L	L	N	<u>W</u>	<u>H</u>	N	Q	K	N	Y	L	A

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VL CDR1 20: Lys Ser Ser Gln Ser Leu Leu Asn Ser Gly Asn Gln Lys Asn Tyr Leu Ala  
65: Lys Ser Ser Arg Ser Leu Leu Asn Ser Gly Asn Gln Lys Asn Tyr Leu Ala  
66: Lys Ser Ser Ser Leu Leu Asn Ser Gly Asn Gln Lys Asn Tyr Leu Ala  
67: Lys Ser Ser Gln Ser Leu Leu Ser Ser Gly Asn Gln Lys Asn Tyr Leu Ala  
68: Lys Ser Ser Gln Ser Leu Leu Asn Tyr Gly Asn Gln Lys Asn Tyr Leu Ala  
69: Lys Ser Ser Gln Ser Leu Leu Asn Trp Gly Asn Gln Lys Asn Tyr Leu Ala  
70: Lys Ser Ser Gln Ser Leu Leu Asn His Gly Asn Gln Lys Asn Tyr Leu Ala  
71: Lys Ser Ser Gln Ser Leu Leu Asn Arg Gly Asn Gln Lys Asn Tyr Leu Ala  
72: Lys Ser Ser Gln Ser Leu Leu Asn Ser Tyr Asn Gln Lys Asn Tyr Leu Ala  
73: Lys Ser Ser Gln Ser Leu Leu Asn Ser Arg Asn Gln Lys Asn Tyr Leu Ala  
74: Lys Ser Ser Gln Ser Leu Leu Asn Ser His Asn Gln Lys Asn Tyr Leu Ala  
75: Lys Ser Ser Gln Ser Leu Leu Asn Ser Ile Asn Gln Lys Asn Tyr Leu Ala  
76: Lys Ser Ser Gln Ser Leu Leu Asn Ser Gly Asn Lys Lys Asn Tyr Leu Ala  
157: Lys Ser Ser Gln Ser Leu Leu Asn Trp Tyr Asn Gln Lys Asn Tyr Leu Ala  
158: Lys Ser Ser Gln Ser Leu Leu Asn Tyr Tyr Asn Gln Lys Asn Tyr Leu Ala  
159: Lys Ser Ser Gln Ser Leu Leu Asn Tyr His Asn Gln Lys Asn Tyr Leu Ala  
160: Lys Ser Ser Gln Ser Leu Leu Asn Arg Tyr Asn Gln Lys Asn Tyr Leu Ala  
161: Lys Ser Ser Gln Ser Leu Leu Asn Trp His Asn Gln Lys Asn Tyr Leu Ala

VL CDR2	1	2	3	4	5	6	7
SEQ ID NO: 22 WT, 2D4, 2D4H1- C3, DcomD7, DhuG5, DhuH8	G	A	S	T	R	E	S

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VL CDR2

22: Gly Ala Ser Thr Arg Glu Ser

HUIV26 CDR SUBSTITUTIONS DISCLOSED IN SPECIFICATION

VL CDR3	1	2	3	4	5 <sup>(93)</sup>	6	7	8	9
SEQ ID NO: 24 WT	Q	N	D	H	S	Y	P	Y	T
SEQ ID NO: 77 2D4, 2D4H1-C3, DcomD7, DhuG5, DhuH8	Q	N	D	H	<b>Q</b>	Y	P	Y	T
SEQ ID NO: 78	Q	N	D	H	<u>G</u>	Y	P	Y	T
SEQ ID NO: 79	Q	N	D	H	<u>L</u>	Y	P	Y	T
SEQ ID NO: 80	Q	N	D	H	<u>A</u>	Y	P	Y	T
SEQ ID NO: 81	Q	N	D	H	<u>T</u>	Y	P	Y	T
SEQ ID NO: 82	Q	N	D	H	<u>V</u>	Y	P	Y	T
SEQ ID NO: 83	Q	N	D	H	S	<u>N</u>	P	Y	T
SEQ ID NO: 84	Q	N	D	H	S	<u>S</u>	P	Y	T
SEQ ID NO: 85	Q	N	D	H	S	<u>P</u>	P	Y	T
SEQ ID NO: 86	Q	N	D	H	S	<u>M</u>	P	Y	T

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HUIV26 CDR SUBSTITUTIONS DISCLOSED IN SPECIFICATION

VL CDR3

24: Gln Asn Asp His Ser Tyr Pro Tyr Thr  
77: Gln Asn Asp His Gln Tyr Pro Tyr Thr  
78: Gln Asn Asp His Gly Tyr Pro Tyr Thr  
79: Gln Asn Asp His Leu Tyr Pro Tyr Thr  
80: Gln Asn Asp His Ala Tyr Pro Tyr Thr  
81: Gln Asn Asp His Thr Tyr Pro Tyr Thr  
82: Gln Asn Asp His Val Tyr Pro Tyr Thr  
83: Gln Asn Asp His Ser Asn Pro Tyr Thr  
84: Gln Asn Asp His Ser Ser Pro Tyr Thr  
85: Gln Asn Asp His Ser Pro Pro Tyr Thr  
86: Gln Asn Asp His Ser Met Pro Tyr Thr